CLAIMS

1. Method for reducing vibrations in a motor vehicle in which the disturbing vibrations are determined by a control and regulating device using suitable sensors and at least one device is activated when previously established limiting values are exceeded by the control and regulating device such that the disturbing motion is completely eliminated or at least damped in its amplitude, wherein the at least one device acts in at least one rotating component in the motor vehicle drive train such that the latter component or components are continuously or periodically braked in their rotary motion when the vibrations occur or are excited to a compensatory vibration.

2. Method according to claim 1, wherein the compensatory vibration or the brake intervention has the same or a similar frequency as the vibration acting as a disturbance, but has a phase offset in relation to this that leads to a reduction of the amplitude of the disturbing vibration.

3. Method according to claim 1 or claim 2, wherein a starting or gear box in the drive train is actuated by the control and regulating device such that its torque transmission capacity oscillates with the frequency of the disturbing vibration and has a phase offset in relation to this through which the amplitude of the disturbing vibration is reduced to a predetermined value.

4. Method according to at least one of claims 1 to 2, wherein a service brake acting on the input shaft of the drive train is actuated by the control and regulating device such that with a rise in the vibration amplitude of the disturbing vibration, the service brake brakes the transmission input shaft to a rotational speed that reduces the amplitude of the disturbing vibration to a predetermined value.

5. Method according to at least one of claims 1 to 2, wherein an abrasion-free permanent brake arranged according to drive engineering behind the transmission is actuated by the control and regulating device such that with a rise in the vibration amplitude of the disturbing vibration, the permanent brake brakes the rotational speed of the wheel drive shafts such that the amplitude of the disturbing longitudinal oscillation is reduced to a predetermined value.

6. Method according to at least one of claims 1 to 2, wherein the service brakes are actuated on the driven motor vehicle wheels by the control and regulating device such that with a rise in the vibration amplitude of the disturbing vibration, the driven motor vehicle wheels are braked to a rotational speed via which the amplitude of the disturbing vibration is reduced to a predetermined value.

7. Method according to at least one of claims 1 to 2, wherein the motor vehicle internal combustion engine is actuated by the control and regulating device such that the rotational speed of the internal combustion engine oscillates with the frequency of the disturbing vibration, but has a phase offset in relation to the latter through which the amplitude of the disturbing vibration is reduced to a predetermined value.

8. Method according to claim 7, wherein the control and regulating device increases the switching rotational speed during a switching travel recognized by this, preferably the idling rotational speed of the internal combustion engine, such that the amplitude of the disturbing vibration is reduced to a predetermined value.

9. Method according to claim 8, wherein the switching rotational speed of the internal combustion engine is increased step by step until the amplitude of the disturbing vibration is reduced to a predetermined value.

10. Method according to at least one of claims 1 to 2, wherein with a double clutch transmission, the second clutch is activated with respect to its torque transmission capacity in addition to the first clutch, which is closed for the shifted step, so far and as frequently and with such a vibration phase offset in relation to the disturbing vibration until the amplitude of the disturbing vibration is reduced to a predetermined value.

11. Method according to at least one of claims 1 to 2, wherein a synchronization device for a not shifted transmission step is activated in connection with a gear box so far, as frequently and with such a vibration phase offset until the amplitude of the disturbing vibration is reduced to a predetermined value.

12. Method according to at least one of claims 1 to 2, wherein the control and regulating device records the rotational speeds of the clutch input side and the clutch output side with the aid of rotational speed sensors, and wherein the motor vehicle acceleration can be ascertained by the control and regulating device with the aid of a sensor unit that recognizes longitudinal acceleration.

13. Device for implementing the method according to at least one of claims 1 to 12, characterized by a control and regulating device (24) which is connected with rotational speed sensors (34, 36) and/or vibration sensors (41) via sensor leads (32, 33, 35) for the purpose of recording a disturbing vibration in the drive train and/or in the entire motor vehicle, and is connected through signal engineering via control leads (25, 26, 27, 28, 29, 30, 31) with devices (7, 11, 15, 21, 22, 23) with which motor vehicle parts can be brought into vibration or braked such that their vibration frequency, vibration amplitude and vibration phase angle are constructed in relation to the frequency, amplitude and vibration phase angle of the disturbing vibration, wherein this leads at least to a damping of the amplitude of the disturbing vibration with a superposition with the disturbing vibration.

14. Device according to claim 13, wherein the rotational speed of the input side (5) or the output side (6) of a clutch (4), preferably a starting or gearbox, can be recorded with rotational speed sensors (34, 36).

15. Device according to claim 13, wherein a disturbing motor vehicle longitudinal oscillation, preferably in the region of a motor vehicle seat (37), can be recorded with the vibration sensor (41).

16. Device according to claim 13, wherein the control and regulating device (24) is connected to an actuating device (7) for activating the clutch (4) via a control line (31).

17. Device according to claim 13, wherein the control and regulating device (24) is connected to an actuating device (15) for activating a synchronization device (10) in a gear box (8) through a control line (27).

18. Device according to claim 13, wherein the control and regulating device (24) is connected to a service brake (11) for braking a transmission input shaft (3) of a gear box (8) through a control line (26).

19. Device according to claim 13, wherein the control and regulating device (24) is connected to an abrasion-resistant permanent brake (23) for braking motor vehicle drive shafts (18) through a control line (28).

20. Device according to claim 13, wherein the control and regulating device (24) is connected to service brakes (21, 22) on the driven motor vehicle wheels (19, 20) via control lines (28, 29).

21. Device according to claim 13, wherein the control and regulating device (24) is connected to a rotational speed actuating device, preferably to a power actuator on the internal combustion engine (1) of the motor vehicle via a control line (25).